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Site:	New Bedford
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AGENDA

PUBLIC MEETING
on
NEW BEDFORD HARBOR

7:30 p.m.
December 8, 1982

A brief speaking program will be followed by comments and questions from citizens. If you wish to ask a question or make a statement, please fill out a three-by-five card with your name and address and leave it at the registration desk. When your name is called, please come to the microphone in the center of the hall. So that we will have time for everyone who wishes to be heard, please keep your remarks to two or three minutes.

The meeting will start with brief remarks by the following:

Merrill S. Hohman
U.S. Environmental Protection Agency

Superfund, what it is and how it works

Paul T. Anderson and Russell Isaac
Massachusetts Division of Environmental Quality Engineering

Review of DEQE activities

Dr. Norman Telles
Massachusetts Department of Public Health

Review of work to date in New Bedford by DPH

Gerard Sotolongo
U.S. Environmental Protection Agency

Activities to date and a look ahead at the Remedial Action Master Plan

Also available for questions are John Figler, U.S. Department of Health, Center for Disease Control, and Lee Bridges, Massachusetts Division of Marine Fisheries.

DESCRIPTION OF THE PCB PROBLEM
IN THE NEW BEDFORD, MASSACHUSETTS AREA

The Acushnet River Estuary, which forms the harbor of New Bedford, is grossly contaminated with chemicals known as PCB (Polychlorinated Biphenyls). PCB are synthetic compounds, no longer manufactured in the United States, which were used extensively in closed electrical systems, heat transfer fluids, inks, adhesives, pesticide extenders, carbonless duplicating paper and a variety of other products. Physical and chemical properties of PCB considered to be favorable such as high thermal stability and resistance to oxidation, acids, bases and other chemical agents, render these chemicals difficult to biodegrade. PCB are highly stable in the environment and accumulate in the food chain in a similar fashion to the pesticide DDT.

PCB contamination in New Bedford was first documented by both academic researchers and the federal government over the years 1974-1976. In conducting a New England-wide survey the Environmental Protection Agency (EPA) found high levels of PCB in various locations in New Bedford. Two electrical capacitor manufacturers were found to be actively discharging PCB. One of these has been in operation since 1929, the other since 1938 and EPA suspects that substantial discharges of PCB to New Bedford Harbor by these plants has been taking place since their operations began.

PCB are known to exhibit a variety of toxic effects to humans including chloracne, alterations to normal reproductive functions, and damage to the gastrointestinal tract and nervous system. Furthermore, they are suspect human carcinogens and may also enhance the carcinogenicity of other substances.

Due to the widespread contamination of foodstuffs with PCB the Food and Drug Administration (FDA) has set limits on the upper maximum allowable concentrations of PCB in various foodstuffs including fish. The current FDA limit for fish is 5 parts per million (ppm). PCB concentrations in fish and shellfish from New Bedford have consistently exceeded these limits and the Massachusetts Department of Public Health (DPH) has closed the harbor and an adjoining section of Buzzards Bay to fishing. PCB concentrations in eels, a resource commonly harvested by residents of New Bedford in the past, have exceeded 600 ppm.

The problems facing New Bedford with respect to PCB contamination can be put into three main categories; 1) human health effects 2) effects on fishing in the area and 3) effects on harbor maintenance.

The most probable link of PCB to human intake is the consumption of contaminated fish and shellfish. Although highly contaminated areas of the harbor and Buzzards Bay have been closed to fishing, residents still are known to harvest both fin and shellfish, thus exposing themselves to contaminated food. Of course many individuals regularly consumed contaminated fish long before the adverse effects

of PCB were known. The toxicological effects to these people has not been well documented.

With regard to fishing resources, the closure of the Harbor and sections of Buzzards Bay to fishermen has resulted in an estimated capital loss of \$250,000 per year to the lobster industry alone. Shellfish and finfish industries as well as recreational fishing have suffered accordingly. Furthermore, PCB concentrations found in the harbor area exceed those causing toxic effects to certain marine organisms. The toxic and ecological effects on harvestable natural resources of the area, however, are presently unknown.

Contaminated sediments have had a devastating effect on harbor development projects, most of which require dredging. Dredging in New Bedford is restricted by the difficulties encountered in fulfilling state and federal regulatory requirements for the disposal of contaminated dredge spoils.

The Massachusetts Department of Environmental Quality Engineering (DEQE), EPA and several other state and private agencies and institutions have been studying the PCB problem with respect to clean-up of the contaminants for over a year. A recent cost estimate for the removal of 90% of the contaminated sediments in New Bedford, prepared by Malcolm Pirnie Inc., Engineering Consultants to DEQE, was set at \$130 million dollars. This figure is clearly out of the range of funding by the state of Massachusetts, and we are soliciting support for the funding of PCB removal from New Bedford Harbor.

In a project of this magnitude, a judicious approach to planning and execution must be taken to avoid possible oversight and resultant, unnecessary expenditures of tax dollars. With this in mind, DEQE has coordinated the following proposal to deal with PCB and their repercussions in New Bedford and Buzzards Bay. The proposal is broken down into five subsections: Project Management and Consulting Services, Health Effects, Physical Chemical and Biological Characterizations and Monitoring, Law Enforcement and Local Coordination. Agencies responsible for individual components of the proposal are identified in each section.

(1) Project Management and Consulting Services (DEQE)

a. Project Management

The coordination of the PCB clean-up program in New Bedford will require a full-time commitment of several professionals over its duration. The project will be divided into two phases:

Phase I:

- A review of dredging specifications
- Preparation of applications for dredging funds
- Project management for studies of disposal areas
- Additional field work for the characterization of disposal sites

Personnel: One full-time Biologist or Engineer will be needed for this work, which will cover a span of approximately two years

Total cost of salary plus benefits for 2 years = \$ 60,000.

Phase II:

- Issue bid requests for dredging
- Oversee dredging contracts
- Site inspection for dredging operation
- Coordinate information exchange between other agencies involved in New Bedford PCB studies

Personnel: One Sanitary Biologist/Ecologist, One Coastal Geologist, and two Principal Sanitary Engineer/Civil Engineers will be needed for a duration of approximately 2½ years. Salaries and benefits at \$30,000/person - year = \$300,000.
Laboratory, Secretarial and Drafting support for both phases = \$140,000.

b. Consulting Services

A need for the following consulting services has been identified:

- A detailed evaluation of dredge spoils contamination sites and recommendations for sitings
Cost \$200,000.
- A cost/benefit evaluation of various dredging schemes, using models of PCB Transport from sediments and water column to the biota. Data from studies described below will be used in this evaluation.
Cost \$100,000.

- Design of the dredging program. This design will utilize data on sediment concentrations and physical transport of sediments, generated by studies described below, to predict the most environmentally sound and cost-effective dredging program \$100,000.
- Environmental Impact Report \$100,000.
- Contract drawings and specifications, supervision of construction and resident inspections \$200,000.

Management and Consulting Services, Grand Total
of Costs:

\$1,200,000.

(2) Human Health Effects (Massachusetts Department of Public Health)

The extent to which edible fish taken from the Acushnet River over the past four decades may have caused New Bedford area residents to have elevated PCB levels in their blood and body tissues is unknown. A limited blood sampling program is currently underway but a more comprehensive examination of the human health effects of PCB in New Bedford is necessary.

A suggested approach to this evaluation is to develop a series of health effects studies designed to give information about possible long term PCB effects by evaluating the exposed population for changes in parameters such as cancer mortality, as well as to look for changes in the most biologically sensitive segments of the population; namely, the fetus and new-born infant. Such a series of studies is outlined below:

a. Three Decade Mortality Study

It is proposed that mortality data for the greater New Bedford area for 3 decades be examined for all causes of death with the objective of establishing mortality patterns, especially for cancers, during and after the period in which PCB dumping into the Acushnet River took place.

The cost of this study including personnel, outside services and travel has been estimated at \$104,050.00

b. Analysis of Miscarriages, Neonatal Deaths, Congenital Defects and Birth Weights

The purpose of this study is to conduct a survey of miscarriages, neonatal deaths, congenital defects and birth weights in a 20 year period for the city of New Bedford, and to compare these findings to a similar study of the city of Fall River. New Bedford and Fall River are comparable in terms of demographic characteristics as well as physical geography, industrialization, and socio-economic characteristics including delivery of medical care.

It is felt by many investigators that the most sensitive group of individuals exposed to toxic environmental agents is the group of children who are exposed during their in utero period. When the toxicity is severe enough, the anomaly can be incompatible with survival of the fetus and in utero death and miscarriage result.

The total cost of this study has been estimated
at - \$104,000.00

c. Blood Studies for PCB Levels and Related Changes

The purpose of this study is to collect and analyze a series of blood specimens obtained from residents of greater New Bedford who have a history of PCB ingestion and to compare these with a control group.

The rationale for these studies is the recognition that PCB may adversely affect the liver, nervous and blood systems. Part of the rationale also lies in the fact that some dose-response relationships may exist between PCB levels and alterations in blood indices. This may provide a basis for selecting individuals for more extended studies and may also provide a basis for selecting persons for long-term studies.

The total cost of this study has been
set at - \$125,660.00

Grand Total for Human Health Effects
Studies - \$333,710.00

(3) Physical, Chemical and Biological Characterization and Monitoring
(Woods Hole Oceanographic Institution and the Massachusetts
Division of Marine Fisheries)

In order to coordinate a cost-effective sediment removal program and concurrently be assured that this program will achieve the desired effect (i.e. reduction of PCB levels in the biota), the State must have access to the following information: 1) a precise delineation of PCB sediment concentrations in the New Bedford area, profiled with depth; 2) an elucidation of the physical transport of PCB in the harbor and out to Buzzards Bay; 3) data on the bioaccumulation of PCB by shellfish and finfish from both the sediments and the water column.

Dr. Farrington, the Director of the Coastal Research Center at the Woods Hole Oceanographic Institution, has agreed to coordinate the following work and has provided the estimates of sampling efforts and costs given below. Responsibility for sections a-h will lie with Woods Hole, while section b.1 will be the responsibility of the Massachusetts Division of Marine Fisheries.

a. Sediments

PCB tend to associate with fine-grained sediments. Because previous studies of the sediment types in the harbor, trace metal contents and bathymetry have clearly defined areas of fine-grained sediment, the more traditional transect or random-sampling approach will be modified to emphasize the areas of known or suspected fine-grained sediment accumulation.

A combination of grab samples and cores provides for a real coverage and investigation of depth of contaminated sediments. This will allow an estimate of the total amount of PCB contaminated sediment to be dredged and the location of sediments with varying levels of contamination.

The total costs for one year of pre-dredging studies and two years of past dredging studies has been estimated at - \$ 89,000.00

b. Organisms

Analyses of mussels, lobsters (to be conducted by DMF - see below), oysters, eels and finfish will be conducted. Shellfish studies will provide the State with a point in time and space values (as these organisms have limited mobility) while the lobsters and finfish will provide the State with an estimate of PCB in commercially valuable species. Eels, the most intensively contaminated organisms analyzed to date, will give us a "worst-case" measurement.

The total cost for one year of pre-dredging studies, one year of studies while dredging is in operation and three years of follow-up studies has been estimated at - \$135,000.00

b.1. Lobsters

Lobsters are the most economically important fisheries in the New Bedford area and have been hit the hardest by fishing closures. A two-part study of lobsters from the New Bedford has been prepared by the Division of Marine Fisheries:

- a) To investigate in detail the depuration of PCB in lobsters transferred from New Bedford Harbor waters to clean (non-PCB contaminated) laboratory holding aquaria with controls being maintained at site of capture (inner N.B. harbor) and
 - b) A three-year monitoring study with 20 stations in designated fishery closure areas in New Bedford Harbor.
- Expenditure totals for a three year program are estimated at - \$136,600.00

c. Water and Suspended Particulate Matter Sampling

These measurements are needed to provide values for dissolved or water accommodated PCB concentrations and PCB concentration in particulates transported in and around Buzzards Bay. If these numbers are obtained, a crude model of PCB transport through the system can be constructed if these values are inserted into physical circulation models (see later section).

The total cost for this study has been estimated
at - \$ 17,800.00

d. Air (rain, vapor phase and particulates)

It is well known that a significant, chronic source of PCB in ocean areas is air-borne PCB input. Thus, in construction of simple but dynamic models of PCB biogeochemistry in Buzzards Bay, we may encounter problems in fitting data to the model or making a viable model without atmospheric data. These measurements would also go a long way towards establishing levels in the atmosphere to which people in the area are exposed.

The total cost for this study has been estimated
at - \$ 17,000.00

e. Physical Oceanography Survey and Research Program

The objective of this study is to better define the circulation in Buzzards Bay and in particular, water exchange between outer New Bedford Harbor and Buzzards Bay. Information about the physical oceanography of Buzzards Bay will provide much needed information for harbor development and will provide basis for PCB transport modeling.

The total estimated cost for two years of research
is - \$300,000.00

f. Trace Metals and Selected Organic Pollutants

In all of these estimates, we have to keep in mind that no provision has been made for trace metal analyses or analyses for other organic pollutants. New Bedford Harbor sediments in addition to having a PCB problem, are known to be contaminated by heavy metals. Almost certainly there will need to be some of these measurements made to meet legal requirements of regulations.

The total cost of this work is estimated to be about 10% of the current costs for PCB analyses, or \$ 42,000.00

g. Research Component

Past experience has suggested strongly that about \$50,000 per year for three years be reserved as a contingency for research in support of or along with the measurements and monitoring program. This would cover such items as experimental verification of sediment/water/organism partition coefficients for PCB; high resolution measurements for the very toxic environmental reactions products and impurities in PCB unexpected hot spot verifications; and measurements during or after a severe storm.

An initial assessment of PCB effects on commercially valuable species (e.g., effects on reproductive success, viability of eggs and survival of larvae) will also be conducted. After this initial assessment, further funding may be required.

Total costs for this work have been estimated
at - \$350,000.00

h. Administration Costs

The total cost for general and administrative duties over the course of the study has been estimated at 20% of the above effort, or - \$150,160.00

Grand total for all phases of physical, chemical, and biological monitoring and characterization comes
to - \$1,037,560.00

(4) Law Enforcement

Although the Massachusetts Department of Public Health has closed New Bedford Harbor and an adjoining section of Buzzards Bay to fishing, both commercial and recreational fishing for shellfish, finfish and eels persists. Enforcement action is needed immediately so that the health of local residents can be protected. Unfortunately, due to recent cuts to the State budget, law enforcement has lost 12 of its land officers and 6 of its boat officers, as well as suffering the docking of one of its two patrol boats. Under these conditions the Division of Law Enforcement cannot ensure that unlawful harvesting of fish from areas contaminated with PCB will be curtailed.

In order to provide the degree of protection needed for New Bedford the Division of Law Enforcement will require support costs for patrol boat salaries and support for boat based and land based natural resource officers and two police cruisers. The costs estimated for enforcement has been estimated at \$187,000 per year. Depending on the length of closure of the harbor, DLE will require this funding on a per annum basis. Three years of enforcement are expected at this time. Total costs estimated for enforcement come to \$561,000.00

(5) Local Coordination

A coordinator at the local State Government level will be needed for at least three years to work with city and state environmental groups and legislature, and to disseminate public information.

The total cost of salary plus benefits for 3 years- \$ 90,000.00

Summary of Expenditures for Proposed PCB Studies:

Project Management and Consulting Services	\$1,200,000.00
Human Health Effects	333,710.00
Physical, Chemical and Biological Characterization and Monitoring	1,237,560.00
Law Enforcement	561,000.00
Local Coordination	90,000.00

Grand Total for all Studies: \$3,422,270.00